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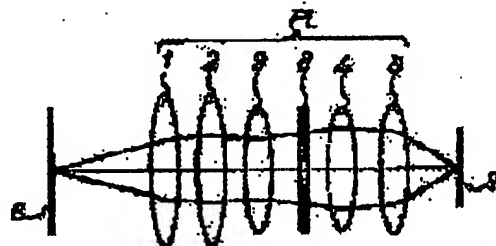
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(54) PROJECTION OPTICAL SYSTEM AND PROJECTION ALIGNER USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To excellently correct the birefringence of an optical element incorporated in a projection optical system and, to transfer patterns with high accuracy, by incorporating a means which corrects the birefringence of the optical element in the optical system.

SOLUTION: A birefringence correcting member 8 is incorporated in an optical system so as to cancel phase variation. Since a material equivalent to the optical glass used for lens elements 1-5 must be used for the member 8, and birefringence having a prescribed distribution must be caused through the optical glass, such a phenomenon as the structural birefringence is utilized. Namely, the phase difference between a polarized component in the direction parallel to the grooves of a diffraction grating and the polarized component in the direction perpendicular to the groove can be set at an arbitrary value, by using a fine diffraction grating indicating the structural birefringence and appropriately selecting the duty ratio of the grating and the depths of the grooves.



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